chapter 11

# Analysis of Decentralized Operations

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## Learning Objectives

After studying Chapter 11, you will be able to:

- Define the components of division net income, division direct profit, division controllable profit, and division contribution margin.
- Describe the problems of selecting an investment base for evaluating performance.
- Evaluate a division manager's performance using return on investment, residual income, and the economic value added approach.
- Identify the criteria for developing and evaluating transfer pricing policies.
- Discuss the advantages and disadvantages of alternative transfer pricing methods.
- Explain how the importance of intracompany dealings, the existence of external markets, and the relative power positions of the divisions affect transfer pricing.
- Understand transfer pricing issues in the international arena.

## Chapter Outline



### *Dividing the Profit Pie: Whose Is Whose?*

*Shagari Petroleum Company is a large Nigerian oil company headquartered in Lagos. The company has five operating divisions: Exploration & Production, Trading & Supply, Gas Processing, Refining, and Marketing & Distribution. Each division is responsible for generating a profit and for managing its investment in assets. Debates have raged among division managers about who earned what profits since, in many cases, "Your revenues are my costs."*

*The Exploration & Production Division has the task of finding, developing, and producing oil and gas reserves. Oil produced is sold to the Trading & Supply Division or to outside customers, depending on who offers the best prices. Gas produced is sold to the Gas Processing Division, petrochemical companies, or pipeline companies.*

*The Trading & Supply Division is responsible for meeting the crude oil needs of the Refining Division. It purchases crude oil from the Exploration & Production Division and the open market. Crude oil not sold to Refining is marketed overseas. Consequently, the division engages in speculative buying and selling as a major means of generating profits.*

*Although the Gas Processing Division may purchase gas from other companies, 90 percent of its gas needs are met by the Exploration & Production Division. Processing results in liquid petroleum gas products such as ethane, propane, and butane. These products are sold to the Marketing & Distribution Division and to petrochemical companies.*

*The Refining Division has refineries in Kano, on the Niger River, and in Ibadan. The refineries have the capability to produce a full range of petroleum products. Finished products are sold either to the Marketing & Distribution Division or to an overseas wholesale market.*

*Marketing & Distribution sells to utilities and international resellers, plus industrial, governmental, commercial, and residential customers. It buys its products from the Refining and Gas Processing Divisions. If shortages occur, it may purchase from overseas wholesale markets. The division sells a wide range of products. It owns a barge fleet, tanker trucks, and some pipeline facilities for transporting the products. Other product shipments are contracted with shipping companies.*

*Since the divisions each generate profits and have tremendous investments in assets, Shagari Petroleum wants to develop an appropriate measure for evaluating the financial performance of the divisions and their managers. Also, a transfer price policy should value intracompany deals fairly.*

## Introduction

One of the most striking characteristics of organizations over the past thirty years has been top management's desire to grow and yet retain the advantages of smallness. Companies have decentralized operations to retain this element of smallness, to build "entrepreneurial spirit," and to motivate division managers to act as the heads of their "own" companies.

In general, a **decentralized company** is one in which operating subunits (usually called divisions) are created with definite organizational boundaries, each with managers who have decision-making authority. Thus, responsibility for portions of the company's profits can be traced to specific division managers. Even though the amount of authority granted to these managers varies among companies, the spirit of decentralization is clear—to divide a company into relatively self-contained divisions and allow them to operate in an autonomous fashion.

This chapter discusses two problem areas common to evaluating divisional performance. First, we discuss various evaluation measures and how these measures can be used. Then we discuss criteria, approaches, and problems associated with transfer prices for goods and services moving among divisions.

## 11.1 Review of Responsibility Centers

Before discussing decentralization and performance measures, it is essential to review the types of responsibility centers first introduced in Chapter 6. A responsibility center is any organizational unit where control exists over costs or revenues. Managers of cost centers have control over the incurrence of cost but not over revenues. Cost centers are usually found at lower levels of an organization but may include entire plants or even entire parts of an organization, such as manufacturing or the controller's office. In contrast, managers

of profit centers have control over both costs and revenues. These managers are responsible for generating revenues and for the costs incurred in generating those revenues.

In investment centers, managers control costs, revenues, and assets used in operations. The investment involves plants and equipment, receivables, inventories, and, in some cases, payables traceable to the investment center's operations. Companies or subsidiaries could be investment centers or profit centers, depending on whether the corporate headquarters gives investment responsibility to these levels. Investment responsibility is defined as authority to buy, sell, and use assets.

Top management's intent often determines the type of responsibility center. In a large company, a data processing center could be a cost center, either absorbing its own costs or allocating its costs to users of the firm's computer operations. As a profit center, it would be allowed to charge a rate for data processing services it provides to internal users and be expected to earn a profit on its operations. To create an investment center, the manager would be given responsibility to acquire equipment and update services from funds generated by its charges for services provided. Often, organizational structures create natural cost, profit, or investment centers. But managerial intent is perhaps the most important factor in determining how a decentralized unit will be viewed and managed.

## 11.2 Advantages of Decentralization

**Decentralization** is the delegation of decision-making authority to lower management levels in an organization. The degree of decentralization depends on the amount of decision-making authority top management delegates to successively lower managerial levels. Advantages of decentralizing include:

1. **Motivated managers.** Managers who actively participate in decision making are more committed to working for the success of their divisions and are more willing to accept the consequences of their actions, whether positive or negative.
2. **Faster decisions.** In a decentralized organization, managers who are close to the decision point and familiar with the problems and situations are allowed to make the decisions. Consequently, decisions can be made faster without moving data up the organization and having a decision made by a manager far removed from the action.
3. **Enhanced specialization.** Delegating authority permits the various levels of management to do those things each does best. For example, top management can concentrate on strategic planning and policy development; middle management on tactical decisions and management control; and lower management on operating decisions.
4. **Defined span of control.** As an organization increases in size, top management has more difficulty controlling the organization. Decentralizing the authority defines more narrowly the span of control for each manager and thus makes the control system more manageable.
5. **Training.** Experience in decision making at low management levels results in trained managers who can assume higher levels of responsibility when needed.

To realize the full benefits of these advantages, top management must address the following issues:

1. **Competent people.** Without competent people, the best policies break down; a lack of control reduces the efficiency and effectiveness of operations.
2. **Measurement system.** The same measurement system should be used for all divisions. Top management must develop policies that provide consistency in reporting periods, methods of reporting, and methods of data collection.
3. **Clear corporate goals.** Left to themselves, division managers may work for their own interests without consideration of benefits to the entire organization. Top management needs to focus all managers' efforts on corporate goals through planning and incentive systems.

Formulating the best method for controlling and evaluating divisions is usually more complex than any other single control activity within a company. Motivation, control, and managerial behavior are broad topics and are far beyond the scope of this book.

## 11.3 Measurement of Financial Performance

In previous chapters, planning and control methods were discussed. We apply these to cost, profit, and investment center evaluations. Cost controls used in cost centers are also relevant for profit and investment centers. Revenue and profit measurements used in profit centers are also applied to investment centers. Thus, we can build the following planning and control structure:

| Centers: | Cost | Profit | Investment |
|---|---|---|---|
| Expense budgeting | X | X | X |
| Flexible budgets | X | X | X |
| Plan versus actual expense comparisons | X | X | X |
| Standard cost variances | X | X | X |
| | | | |
| Revenue and profit budgeting | X | X | |
| Plan versus actual controllable contribution margin. | X | X | |
| Plan versus actual direct contribution margin | X | X | |
| | | | |
| Asset utilization and rate of return target setting | | | X |
| Plan versus actual asset utilization comparisons | | | X |
| Plan versus actual rates of return comparisons | | | X |

It is rare that financial measures alone can evaluate the performance of a responsibility center. Product or service quality, delivery reliability, market share, and responsiveness to customers are all nonfinancial measures critical to the overall success of a firm. Both financial and nonfinancial goals are often part of a manager's business plan. We discuss in detail nonfinancial performance measures in the next chapter.

For profit and investment centers, selecting proper financial performance measures is not an easy task. The financial measures chosen:

- Send messages to all managers about what is important to the firm's executive managers.
- Are often the basis for calculating incentive compensation, personnel evaluations, and promotion decisions.
- Influence the allocation of new capital and personnel resources.

Rate of return on investment is widely accepted as the primary measure of performance for investment centers.

## Return on Investment

**Return on investment (ROI)** is defined as a ratio:

$$\text{Return on investment} = \text{Profit} \div \text{Investment}$$

We can decompose this ratio into two elements for better control and evaluation:

$$\text{Return on investment} = (\text{Profit} \div \text{Sales}) \times (\text{Sales} \div \text{Investment})$$

The first term, Profit ÷ Sales, is **return on sales (ROS)** (sometimes called the profit margin). It measures the percentage of each sales dollar that is turned into profit. The second term, Sales ÷ Investment, is **asset turnover**, which measures the ability to generate sales from the assets a division employs.

Implementing the ROI concept raises a number of issues. Problems exist in defining the profit numerator as well as the investment denominator. Even then, divisions within a company may be dissimilar, creating "apples and oranges" comparisons.

### *The Numerator – Division Profit*

The choice of the profit figure is not simple. The first problem is how the profit number will be used. Will it be used to evaluate the division as an economic unit or to evaluate the division manager's performance? A different profit is appropriate for each. Once the purpose is decided, the next problem is how to construct the best measure from several profit concepts commonly available. Assume that a division of Taratoot Financial Consulting reports the following profit and loss data (all numbers in thousands):

| | |
|---|---|
| Division revenues | $1,000 |
| Direct division costs: | |
| Variable operating costs | 700 |
| Fixed division overhead – controllable at the division level | 100 |
| Fixed division overhead – noncontrollable at the division level | 50 |
| Indirect division costs: | |
| Allocated (fixed) home office overhead | 60 |

Four alternative income statements organize the data for different purposes.

| | Division contribution margin | Division contribution margin | Segment margin | Division net profit |
|---|---|---|---|---|
| Revenue | $1,000 | $1,000 | $1,000 | $1,000 |
| Direct cost: | | | | |
| Variable costs | 700 | 700 | 700 | 700 |
| | $300 | | | |
| Fixed controllable costs | | 100 | 100 | 100 |
| | | $200 | | |
| Fixed noncontrollable costs. | | | 50 | 50 |
| | | | $150 | |
| Indirect cost: | | | | 60 |
| Allocated corporate overhead | | | | $90 |

### *Division Net Profit*

The best profit measure for division performance may appear to be **division net profit**. However, the division net profit calculation includes allocated corporate overhead. An example of this cost would be the cost of operating the president's office. Although each division benefits from these costs, they are not controllable at the division level nor traceable to specific divisions. Generally, division net profit is a poor indicator of a division's performance. The main arguments for using division net profit are that the division manager is made aware of the entire firm's operating costs and that these costs must be covered by the divisions' earnings. Another argument is that the allocated corporate overhead costs stimulate division managers to pressure corporate managers to control their costs.

Corporate overhead expenses that are traceable to specific divisions should be assigned directly to those divisions. Allocated corporate overhead expenses are likely to be arbitrary and open to question by the division managers. Often, division managers spend much time attempting to reduce their costs by getting top management to change the allocation procedure.

### *Segment Margin*

**Segment margin** is defined as total division revenue less direct costs of the division. This concept avoids the main difficulty of division net profit since common costs of the firm are excluded. The segment margin is the most useful profit measure for comparing divisions' performances, for resource allocation decisions, and for corporate planning purposes. All revenues and costs traceable to the divisions are included.

Often, corporate-level decision makers use the segment margin to indicate where additional investments should be made to generate the greatest incremental returns. Certainly,

specific projects must justify themselves, as Chapter 10 demonstrates. But more attention will be paid to high performing divisions.

### *Division Controllable Margin*

**Division controllable margin** is defined as total division revenue less all costs that are directly traceable to the division and that are controllable by the division manager. This calculation is best for managerial performance measurement, because it reflects the division manager's ability to execute assigned responsibilities. Any variances between actual and plan can be explained in terms of factors over which the division manager has control.

Sometimes direct costs are traceable to a division but cannot be controlled at that level. For instance, a division head's salary is controllable only at a higher management level. Also, some division costs, such as long-term leases and depreciation, are from past investment decisions that may have been made by higher level managers or previous division managers. These direct but noncontrollable costs should be excluded from the profit calculation for managerial evaluations. If this is not done, the division profit used for performance evaluation may be affected by actions outside the division or of prior managers.

Some factors in the division controllable margin may be difficult for the division manager to influence; for example, the materials prices may increase. Even though the price cannot be changed, perhaps alternate materials can be used or alternate sources of supply can be found. Problems of this nature may be difficult to solve, but they are part of the division management's responsibility. Failure to solve such problems is different from being unable to take action due to lack of authority.

### *Division Contribution Margin*

The **division contribution margin** is defined as total revenue less variable costs. Although contribution margin is useful in decision making, for performance evaluation its defect is obvious: namely, direct and controllable fixed costs are excluded from the calculation. Variable costs do have an important role in intracompany pricing policies and decisions, which are discussed later in this chapter.

### *The Denominator – Investment*

If divisions are to be evaluated by ROI, it is necessary to measure the investment base. The **investment base** may be total direct assets, net direct assets, or net direct assets managed. Net direct assets would be traceable assets minus any traceable liabilities. Again, the distinction between direct and controllability is important. Certain assets may be traced to a division but not be in service or usable by the division manager.

Since ROI is a measure for a period of time, which date during that period should be chosen to measure the amount of assets? Usually, a simple average of the beginning and ending amounts is used.

### *Asset Identification*

The first task is to decide which assets to assign to each division. Many assets can be traced directly to a division. For example, much of a firm's physical property can be traced to a particular division. A division may handle its own receivables and inventory and may even have jurisdiction over its own cash. But sometimes, these traceable assets are centrally administered and controlled. By proper account coding, it is possible to trace receivables and inventories to specific divisions. Cash, as a corporate asset, is rarely traceable to specific divisions.

For assets that are common to several divisions, no amount of coding, sorting, or classifying will enable tracing them to the divisions. An example of a common asset would be the administrative offices used by two product divisions. Any basis of allocation would be arbitrary. As with home office expenses, avoiding these arbitrary allocations generally improves the analysis.

### *Asset Valuation*

Once the assets have been identified with the divisions, the value of the assets must be determined. It may seem that the assets should be stated at some current value (e.g., replacement cost, original cost adjusted for price-level changes) rather than on a historical-cost basis. The obvious difficulty is measurement. How can replacement costs be determined? If a common-dollar base is desirable, which price-level index should be used? It is easier to raise questions than to give answers.

### *Preferred Relationships*

Matching an income measure and an investment base is the next step. If the purpose is to evaluate the division itself, segment margin would be the natural match with net division direct assets, which are assets traceable to the specific division less traceable liabilities. To evaluate the division managers, controllable margin should be matched with net direct managed assets. Managed assets include the assets controlled by the division manager having the authority to acquire, use, and dispose of these assets.

### *Additional Problems With ROI*

Using the ROI concept as a means of evaluating performance raises some concerns about how effective ROI can be and about potential undesirable impacts that may arise from its use.

### *Comparability Among Divisions*

One of the major concerns is that ROI comparisons should use the same definitions for the same purposes. Divisions being compared should have the same or similar accounting methods. The same depreciation method should apply to similar classes or categories of assets. Likewise, incorrect comparisons result when one division uses FIFO for inventories and another division uses LIFO. Also, each division being compared should have the same or similar policies for capitalizing or expensing costs. For instance, one division

might expense tools whenever they are purchased. Another division might capitalize the original tools plus any increments and expense replacement tools. It would be inappropriate to compare these two divisions on the basis of ROI without making appropriate adjustments.

### *Motivational Impact on Managers*

From top management's point of view, division managers should be working to achieve the overall objectives of the organization. This requires strategies, policies, techniques, and incentives to act as motivators for division managers. **Goal congruence** is the term often used to link each division manager's goals with top management's goals. Individual managers may have personal and organizational goals that differ from top management's goals. When designing managerial performance criteria, senior management must carefully select measures to promote goal congruence. Thus, managers should be motivated to work for their own benefit while, at the same time, benefiting the whole organization.

ROI may sometimes promote decisions that are not goal congruent. For example, suppose that the Northern Division of Ellman's Payroll Service is currently earning 25 percent ROI. The division manager may be reluctant to make additional investments at, perhaps, 20 percent because the average return of the division would drop. However, if new investments in other divisions of the company yield only 15 percent, company management may prefer that the investment with a yield of 20 percent be accepted. The high-earning manager may still be reluctant to lower the average ROI from 25 percent even though company management has set 15 percent as the base rate for comparison. Thus, the use of ROI might restrict additional investment to the detriment of company-wide profitability.

### *Improving ROI*

Since division managers are expected to improve ROI, they look to components they can control. ROI can be improved in three direct ways: by increasing sales, by decreasing expenses, and by reducing the level of investment. To see how individual changes affect the ROI calculation, consider the following data for the Sports Division of Eddington Entertainment Corporation:

| | |
|---|---|
| Sales: | $2,500,000 |
| Variable costs: | 1,500,000 |
| Contribution margin: | $1,000,000 |
| Fixed costs: | 600,000 |
| Net income: | $400,000 |
| Investment base: | $2,000,000 |
| Return on sales: | 16.00% [$400,000 / $2,500,000] |
| Asset turnover: | 1.25 times [$2,500,000 / $2,000,000] |
| ROI: | 20.00% [$400,000 / $2,000,000] |

### *Increase Sales*

Looking at ROI as a product of return on sales and asset turnover might give the impression that the sales figure is neutral, since it is the denominator in the return on sales and the numerator in asset turnover. However, suppose the Sports Division can increase ticket sales without increasing unit variable costs or fixed costs. The return on sales improves. This happens anytime the percentage increase in total expenses is less than the percentage increase in dollar sales. The increase in sales also improves the asset turnover as long as there is not a proportionate increase in assets. The objectives are to attain the highest level of net income from a given amount of sales and the highest level of sales from a given investment base.

Continuing the numerical example for the Sports Division, assume that ticket sales and total variable costs increase by 5 percent and that fixed costs and the investment base remain constant. ROI, return on sales, and asset turnover all increase, as follows:

| | |
|---|---|
| Sales (105%): | $2,625,000 |
| Variable costs (105%): | 1,575,000 |
| Contribution margin: | $1,050,000 |
| Fixed costs: | 600,000 |
| Net income: | $ 450,000 |
| Investment base: | $2,000,000 |
| Return on sales: | 17.14% [$450,000 / $2,625,000] |
| Asset turnover: | 1.31 times [$2,625,000 / $2,000,000] |
| ROI: | 22.50% [$450,000 / $2,000,000] |

### *Reduce Expenses*

Often, the easiest path to improved ROI is to implement a cost reduction program (focusing on certain expense areas or across-the-board cuts). Reducing costs is usually the first approach managers take when facing a declining return on sales. A rather typical pattern has emerged. First, review the discretionary fixed costs, either individual cost items or programs representing a package of discretionary fixed costs, and find those that can be curtailed or eliminated quickly. Second, look for ways to make employees more efficient by eliminating duplication, nonvalue-adding time, or downtime and by increasing individual workloads. Third, review costs of resource inputs for operations and seek less costly choices.

### *Reduce Investment Base*

Managers have traditionally sought to control sales and expenses. Their sensitivity to asset management, however, has not always been at the same high level. Managers, whose performances are evaluated using ROI, will find that trimming any excess investment can have a significant impact on the asset turnover and, therefore, on ROI. Reducing unnecessary investment often involves selling or writing off unused or unproductive assets. Recently, many companies have reduced investment in inventories, and also lowered nonvalue-added expenses, by changing to just-in-time inventory systems. Referring to the

original Sports Division data, assume that its managers are able to reduce the investment by 4 percent but still maintain the same level of sales and expenses. As a result, both the asset turnover and ROI increase:

| | |
|---|---|
| Sales (105%): | $2,500,000 |
| Variable costs (105%): | 1,500,000 |
| Contribution margin: | $1,000,000 |
| Fixed costs: | 600,000 |
| Net income: | $400,000 |
| Investment base: | $1,920,000 |
| Return on sales: | 16.00% [$400,000 / $2,500,000] |
| Asset turnover: | 1.30 times [$2,500,000 / $1,920,000] |
| ROI: | 20.83% [$400,000 / $1,920,000] |

If the eliminated investment is a depreciable asset, depreciation expense will also be reduced. This causes a compound reaction: profitability increases, return on sales increases, and ROI increases by improvement in both the return on sales and the asset turnover.

**Contemporary Practice 11.1**

**ROI of College Education**

"Snob appeal often plays a big role in the selection of a college by high school seniors and their families. . . But what happens when you look at earnings per dollar spent to get an education? Before you spot a single Ivy League or big-name private school, public campuses grab 17 of PayScale's first 18 spots. . . Leading is Georgia Tech's 13.9% return on investment. Next is the University of Virginia's 13.3%." (Katzeff, 2011)

## Residual Income

The use of residual income has been proposed as an alternative to ROI. Residual income focuses attention on a dollar amount (instead of a ratio) and on a minimum expected return. The maximization of a dollar amount will tend to be in the best interest of both the division manager and the company as a whole.

In general, **residual income** is defined as the operating profit of a division less an imputed charge for the operating capital used by the division. The same measurement and valuation problems we encountered with ROI still apply to residual income. But motivational problems should be eased. Assume that, for Bakin Moving Company, a division's current controllable margin (before any imputed capital charge) is $250,000 and the relevant investment is $1,000,000. The ROI, then, is 25 percent. Suppose top management wants

division management to accept incremental investments so long as the return is greater than 15 percent. We refer to this rate as a **minimum desired rate of return**.

This minimum desired rate of return is then used to calculate an imputed charge for division investment funds. The residual income would be calculated as follows:

| | |
|---|---|
| Division controllable margin (before imputed capital charge) | $250,000 |
| Less imputed capital charge (15% x $1,000,000) | 150,000 |
| Division residual income | $100,000 |

The advantage of this evaluation measure is that the division manager is concerned with increasing a dollar amount (in this case, the $100,000) and is likely to accept incremental investments which have a yield of over 15 percent. The division manager's behavior, then, is congruent with company-wide objectives. This would less likely be true with the ROI measure, since any incremental investment earning less than 25 percent pulls down the division's current ROI.

A disadvantage with residual income arises when comparing the performance of divisions of different sizes. For example, a division with $50 million in assets should be expected to have a higher residual income than one with $2 million in assets.

The stage of growth and other risk factors influence the potential profits that a division can generate. Consequently, top management might select different minimum desired rates of return for each division to recognize the unique role each plays in the organization. For example, a start-up division may be more expensive to operate than a division in the mature stage—justifying a lower initial rate of return.

## Economic Value Added

In recent years, an approach quite similar to residual income has been developed to evaluate performance. Like residual income, the **economic value added (EVA)** approach deducts a minimum rate of return (i.e., cost of capital x total capital) from the division's profits, as follows:

$$\text{EVA} = \text{Adjusted accounting profit} - (\text{Cost of capital} \times \text{Total capital})$$

Hence, like residual income, the EVA measure is a dollar amount. ROI, in contrast, is a pure number (i.e., no unit of measure associated with it).

The adjusted accounting profit is an after-tax profit with some expenses, such as research and development, treated differently than is done for external reporting requirements. Managers often have incentives to reduce expenses by cutting amounts spent on items such as research and development. To counteract this short-sighted inclination, research and development can be treated as a depreciable asset rather than as an expense, which would not be allowed for external reporting. The resulting profit number better reflects the division's long-run profit potential. The total capital would also include these expenditures. Another frequent adjustment to total capital is the exclusion of current liabilities.

Whereas the capital charge in the residual income measure is usually based on the minimum *desired* rate of return, EVA uses the *actual* cost of capital. The EVA approach often determines the cost of capital differently than the traditional weighted average cost of capital calculation, which is a weighted average of the cost of debt and the cost of equity. EVA derives a cost of capital based on the industry and risk characteristics of the particular division.

Many large companies such as Tenneco, Equifax, Coca-Cola, and AT&T have begun using the EVA approach and linking EVA to incentive compensation. EVA is viewed as the amount which is added to shareholder wealth. When divisions are making investments that earn returns higher than the cost of capital, then the company's shareholders should earn a return in excess of their expectations, and the company's stock price is likely to rise.

## Ethical Concerns Relating to Performance Measures

Division managers can increase short-run profits of divisions to the detriment of the company as a whole. For example, it may be possible to delay maintenance costs. Such an action will increase short-run profits but adversely affect long-run profitability of the division and the company. Expenditures that engender employee loyalty such as employee physical fitness programs may be eliminated. By reducing training costs, the division manager may not develop long-run top management personnel.

Our earlier discussion that the use of ROI may not promote goal congruent behavior has ethical implications also. A manager should consider whether it is ethical to reject an investment that would benefit the company even though it would reduce the manager's average ROI.

### Contemporary Practice 11.2

**Conflicts of Interest with ROI**

An experiment with individuals in graduate and executive education managerial accounting classes, who averaged about six years of full-time work experience, investigated investment decisions where the participants would be evaluated using ROI. In one setting, the investment under consideration would benefit the company but would reduce the current ROI of the participant. The study estimated that about 51 percent of the respondents would reject the investment. In another setting, a proposed asset replacement would benefit the company in the long-run but would lower the participant's current ROI because the book value of assets is used in the denominator of ROI. The study estimated that about 38 percent of the respondents would reject the investment (Schneider, 2004).

## 11.4 Performance Evaluation Systems in Service Organizations

Service organizations, like manufacturers, also need evaluation systems. Evaluation criteria and measures can depend on whether the service organization is commercial or not-for-profit.

Profit-oriented operations have an incentive to be profitable. They may use ROI, residual income, or EVA, if an appropriate profit measure and an investment base are available. Obviously, organizations such as CPA firms, law firms, insurance agencies, and consulting firms do not have large investment bases. Personnel is their prime resource. Furthermore, they often lease equipment, space, cars, and other operating assets. Using ROI, residual income, or EVA in these situations will not give a realistic measure of performance for the divisions within the organization. Return on revenue is a better measure and a greater management motivator than are ROI, residual income, and EVA.

Not-for-profit organizations are different because profits are not the prime interest of managers. Moreover, revenues are often unrelated to services performed; rather, they come from funding agencies. For example, a police department obtains its operating funds from the local government. The department's mandate is to provide law enforcement services within the limits imposed by the operating funds. But how does one measure the level of services performed—by the number of cases investigated? by time spent on cases? by the number of arrests? Finding criteria for evaluating performance is not an easy task in not-for-profit settings.

## 11.5 Intracompany Transactions and Transfer Pricing Problems

In calculating division profit, problems arise when the divisions are not completely independent. If one division furnishes goods or services to another division, a **transfer price** must be set to determine the buying division's cost and the selling division's revenue.

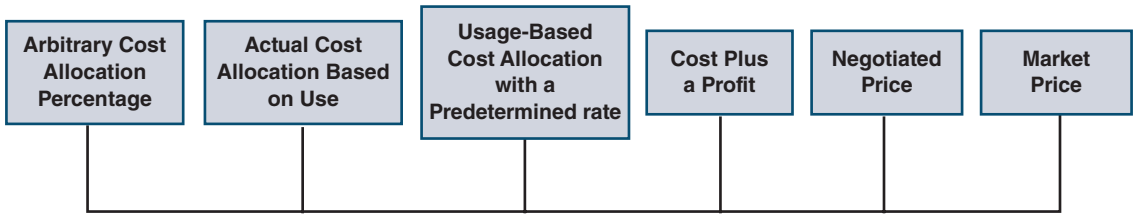
The following list illustrates a variety of intracompany transactions:

1. A centralized accounting department serves all divisions of a company, and its costs are allocated to divisions based on the number of employees in each division.
2. One department provides repairs and maintenance for production departments' equipment in a factory and bills for those services at an average actual cost per hour of service.
3. A Data Processing Services Division provides computer-based information systems services to all other divisions in the company and allocates costs on the basis of predetermined prices for volumes of transactions and data handled.
4. Plant A produces components which are shipped to Plant B for assembly into an end product which is then transferred to the Sales Division for sale to outside customers. Components and products are billed at a "full cost plus a profit" basis between Plants A and B and between Plant B and the Sales Division.

5. Plant J sells strategic raw materials to a variety of customers, including Plant K in the same company. Managers negotiate a special price each year for the raw materials, depending on the supply and demand factors for each plant.
6. Division R sells an industrial product to a broad array of customers. Division S happens to need the product and buys from the sister division at the prevailing market price because of the product's high quality or the division's delivery reliability.

This continuum of accounting approaches for intracompany dealings is shown in Figure 11.1. While not representing any numerical measuring scale, this line does illustrate the range of accounting techniques for intracompany transactions. At one end is pure (arbitrary) cost allocation. At the other end is pure market-driven pricing.

**Figure 11.1: Continuum of accounting approaches for intracompany transactions**




On the left side of the continuum, overhead or administrative costs are being roughly redistributed to other units using cost drivers, benefits received, or even arbitrary rules. Commonly, service departments are transferring costs to producing departments. The middle portion involves internal sales of goods and services where external markets do not exist or where company policies force the divisions to deal with each other internally. The right end of the continuum represents situations where external markets do exist and where market prices are used, in part or in total, as the exchange price. Buyers seek suppliers. Sellers seek customers. If an intracompany sale takes place, it is the best source for the buyer and a profitable sale for the seller and for the company as a whole.

## Desired Qualities of Transfer Prices and Policies

No one transfer pricing method will be best for all situations. A manager who has spent years supervising internal sales and purchases for a major company has said: "Perhaps the optimal policy is one that will produce the least amount of dysfunctional behavior or, at best, an amount that we can tolerate." Hopefully, policies encourage positive behavior. But dysfunctional behavior, actions which hurt the firm's results, can be frequent by-products.

Let us first outline the criteria for creating a transfer pricing system; second, discuss alternative transfer prices; and third, identify the ability of each price to meet the criteria. Criteria for a transfer price can be reduced to four main elements:

1. **Goal congruence.** Will the transfer price encourage each manager to make decisions that will maximize profits for the firm as a whole? In decentralized organizations, perhaps one of the most difficult tasks is to get everyone to pull toward the common goal—the financial success of the whole firm. Success of each division will not guarantee the optimal success for the whole firm.
2. **Performance evaluation.** Will the transfer price allow corporate-level managers to measure the financial performance of division managers in a fair manner? How will power positions that certain divisions have over other divisions be neutralized? For instance, if one division sells its entire output to another division, the buyer can demand concessions from the seller that can cause the seller to appear unprofitable. If the two divisions are to remain independent, the pricing policy must allow the seller to get a reasonable price for its output.
3. **Autonomy.** Will the transfer price policy allow division managers to operate their divisions as if they were operating independent businesses? If a division manager must ask for approval from some higher level, the firm's policies have diluted the autonomy of its managers. If autonomy is restricted greatly, the objectives of decentralization are defeated.
4. **Administrative cost.** Is the transfer pricing system easy and inexpensive to operate? As with all accounting costs, an incremental cost should generate a positive contribution margin. Where internal transaction volume is large and complex, a more extensive internal pricing system is justified. Administrative costs also include waiting for decisions, hours spent haggling, and internal divisiveness.

These four criteria should be prioritized when forming transfer pricing policies. Different situations will demand different transfer pricing policies and therefore different prioritizations.

## Transfer Prices

The most common transfer prices are:

1. Market price.
2. Cost-based prices including:
   (a) Actual full cost.
   (b) Target or predetermined full cost.
   (c) Cost plus a profit.
   (d) Variable cost.
3. Negotiated price.
4. Dual prices.

We will now examine each method with comparison to the transfer pricing criteria.

### *Market Price*

**Market price** is a price set between independent buyers and sellers. Two contrasting conditions are typical:

1. A market price exists, and both buyer and seller have access to other sellers and buyers for the same products.
2. A market price is not readily available, but a pseudo-price is created either by using similar products or by getting outside bids for the same item.

Market price meets more of the transfer pricing criteria than any other method. But finding a market price may be difficult since one may not exist. Examples include intermediate components, industrial supplies, and "make or buy" jobs. The buyer's purchasing department may request bids from outside suppliers. If, because of company policy, the outside bidders are rarely considered seriously, the outside bidders will not play this game for long. Bidding is an expensive process. Some companies have a policy of considering outside vendors seriously and committing a certain percentage of business to these bidders to help keep the system viable.

Even if a market price exists, it may not be applicable. For instance, catalog prices may only vaguely relate to actual sales prices. Market prices may change often. Also, internal selling costs may be less than would be incurred if the products were sold to outsiders, and so the market price should be adjusted downward.

Despite the problems of finding a valid market price, managers generally agree that market prices are best for most transfer pricing situations. A market transfer price parallels the actual market conditions under which these divisions would operate if they were independent companies.

### *Goal Congruence*

When excess capacity exists, market prices may not lead to goal congruence. For instance, Division A, which has excess capacity and a mixture of fixed and variable product costs ($50 per unit and $100 per unit, respectively), could benefit greatly from additional production volume. Division A sells its output on the market for $200 per unit. Division B is looking for a supplier for a part that Division A can easily provide. Division B asks for bids from a variety of suppliers. Company C, an unrelated firm, may be selected because it has bid $160 per unit. This price is well above Division A's variable cost but below A's market-price bid. Managers in A and B are making the best decisions for their respective divisions as they see it, but total company profit is hurt. The firm as a whole would be better off by $60 per unit ($160 − $100) if Division B purchased from Division A. But Division B would need to pay Division A a price $40 higher ($200 − $160), or Division A would have to accept a lower contribution margin ($160 − $100 = $60) than its regular business generates ($200 − $100 = $100).

Many believe that this is a small cost to incur if the individual division managers act in an aggressive, competitive style. What is lost from lack of goal congruence is gained in greater profits from highly motivated quasi-entrepreneurs. Depending on results in specific firms, this trade-off may or may not be justified.

### *Performance Evaluation and Autonomy*

Market prices form an excellent performance indicator because they cannot be manipulated by the individuals who have an interest in profit calculations. A market price

eliminates negotiations and squabbling over costs and definitions of fairness. If market power positions exist, they also exist in the general marketplace.

Where market prices are less clear and are either created or massaged, the pure advantage of market prices declines. In fact, as we move away from a true market price, the price becomes a negotiated price, which is discussed later.

### *Administrative Cost*

As part of normal buying and selling, the transfer price is determined almost costlessly. As we move away from a clear market price, costs increase. Negotiations are expensive in terms of consuming executive time, getting outside bids, and creating support data for negotiating positions.

### *Cost-Based Prices*

Unless market price is readily available, most transfer prices are based on production costs. Three issues stand out in **cost-based transfer prices**:

1. Actual cost versus a standard or budgeted cost.
2. Cost versus cost plus a profit.
3. Full cost versus variable cost.

### *Actual Cost Versus a Standard or Budgeted Cost*

A primary problem with an actual **full-cost transfer price** is that it gives the selling division no incentive to control costs. All product costs are transferred to the buying division, "reimbursed" as revenue to the selling division. This can create a serious competitive problem for the vertically integrated firm that passes parts through numerous divisions before selling a product in a competitive market. Historically, this has been a problem for General Motors Corporation.

Moving to a standard or budgeted cost helps promote cost control but is not a perfect solution. If a budget or standard cost is used for cost control and also for transfer pricing, profit pressures may well subvert the cost system and damage its usefulness as a cost control device. Furthermore, who sets the standard? Is it a tight or lax standard?

### *Cost Versus Cost Plus a Profit*

If cost only is used as a transfer price, the selling unit cannot earn a profit. Full cost plus a profit percentage is a popular solution. Adding a percentage to cost for a profit creates a question: "What percentage?" Somehow 10 percent seems attractive and common. This is, however, an arbitrary choice. Perhaps a markup percentage can be calculated that will cover operating expenses and provide a target return on sales or assets. Even here, these prices fail to produce the kind of competitive environment that decentralization promotes.

### *Full Cost Versus Variable Cost*

Another version of cost-based transfer pricing is variable cost. With **variable-cost transfer prices**, only variable production costs are transferred. These costs are generally materials, direct labor, and variable overhead. Variable cost has the major advantage of encouraging maximum profits for the entire firm when excess capacity exists. This will be illustrated later. The obvious problem is that the selling division must absorb all of its fixed costs. That division is now a loss division, nowhere near a profit center.

With these issues in mind, how well do cost-based transfer prices match with the evaluation criteria?

### *Goal Congruence*

Full-cost transfer prices generally produce suboptimal profits for the firm as a whole. Variable-cost transfer prices generate an optimal firm-wide profit when the selling division has excess capacity. Otherwise, market prices yield optimal firm-wide profits. In general, the definition of the most goal-congruent transfer price is out-of-pocket costs plus any opportunity cost of transferring to the next division. Usually, out-of-pocket costs are the variable costs. The opportunity cost is the contribution margin earned from the best alternative use of the seller's capacity. When there is no excess capacity, the out-of-pocket cost plus opportunity cost equals the market price. These relationships are summarized in Figure 11.2.

## Figure 11.2: Goal-congruent transfer prices

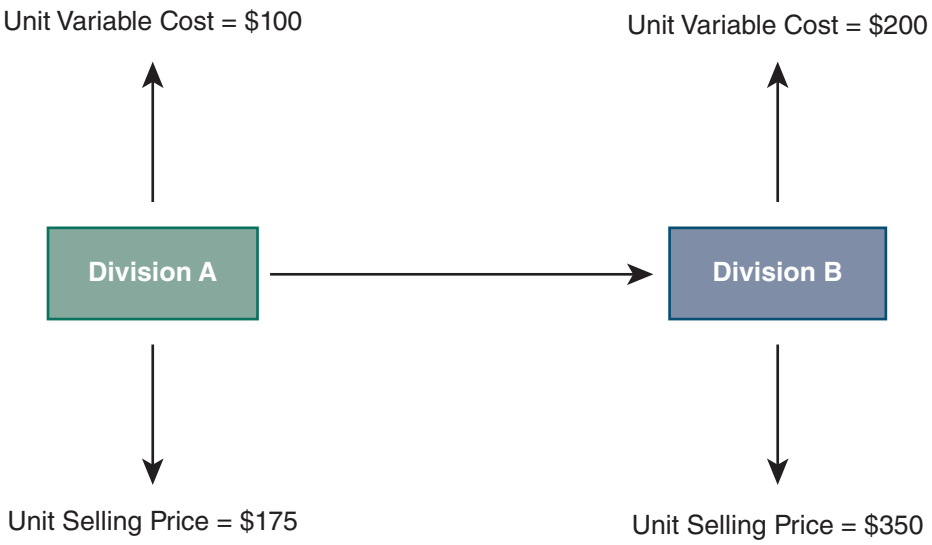
| Goal-Congruent Transfer Price | = | Out-of-Pocket Cost | + | Opportunity Cost of Transferring |
|---|---|---|---|---|

| | | Goal-Congruent Transfer Price |
|---|---|---|
| If Seller has Excess Capacity | → Opportunity Cost Equals Zero | Out-of-Pocket Cost |
| If Seller has No Excess Capacity | → Opportunity Cost Exists | Market Price |

The following example highlights these concepts. Assume that Division A sells to Division B. The output of Division A is Product A, which can be sold to an outside market or to Division B to be processed further and sold as Product B. One unit of Product B uses one unit of Product A. In Division A, variable costs are $100 per unit, and Product A sells for $175. In Division B, additional variable costs are $200 per unit, and Product B sells for

$350. This scenario is diagrammed in Figure 11.3. Arrows indicate costs flowing out of the divisions and revenues flowing into them.

**Figure 11.3: Diagram of example transaction possibilities**




Suppose Division A has excess capacity. Thus, there is no opportunity cost of transferring to Division B, and the company would receive a contribution of $50 per unit ($350 − $200 − $100), assuming that these units do not increase total fixed costs. A full-cost transfer price, however, might not promote a transfer. If the fixed costs per unit for Products A and B totaled more than $50, Division B would not accept a transfer since its costs would be more than $350 per unit. Consequently, the full-cost transfer price is not goal congruent. Using a variable-cost transfer price, Division B would accept the units since now its total cost of $300 per unit is less than $350. The variable-cost transfer price is, therefore, goal congruent.

Now suppose that Division A has no excess capacity—all units produced can be sold to the outside market for $175. By selling outside instead of transferring to Division B, the company would receive a contribution of $75 per unit ($175 − $100) rather than just $50 ($350 − $200 − $100). A variable-cost transfer price, however, would not achieve this higher profit because Division B would readily accept transfers to earn $50 per unit. In contrast, a market price would be goal congruent. With a transfer price of $175, Division B's costs would total $25 more than its revenue ($350 − $200 − $175), so it would not take any units from Division A.

We summarize these analyses using the preceding decision rule:

**Excess capacity:**

Goal congruent transfer price = Out-of-pocket cost + Opportunity cost = $100 + $0 = $100

**No excess capacity:**

$$\text{Goal congruent transfer price} = \text{Out-of-pocket cost} + \text{Opportunity cost}$$
$$= \$100 + (\$175 - \$100) = \$175$$

### *Performance Evaluation and Autonomy*

Clearly, a variable-cost transfer price provides little help in performance evaluation if the division is considered to be a profit or investment center. Autonomy is also violated since close working relationships and much exchange of data are expected. When using full-cost transfer prices, an added profit percentage is necessary to get the seller to a profit position. It is difficult to support any cost-based approach as a strong performance evaluation method for profit centers. Cost-based transfer prices are best suited to cost centers.

### *Administrative Cost*

Cost-based transfer prices are easy to obtain since they are outputs of the cost accounting system. Perhaps this is why, in spite of its weaknesses, cost-based transfer pricing is the most widely used transfer pricing approach.

### *Negotiated Price*

The use of **negotiated transfer prices** is often suggested as a compromise between market-based and cost-based transfer prices. Real advantages may exist in allowing two division managers to arrive at the transfer price through arm's-length bargaining. The self-interests of the division managers may serve the company objectives. Negotiated prices are helpful when:

1. Cost savings occur from selling and buying internally.
2. Additional internal sales fill previously unused capacity, allowing the buyer and seller to share any incremental profit.

As long as the negotiators have relatively equal power positions, negotiations can create a quasi-free market. Friction and bad feelings that may arise from centrally controlled transfer prices may be eliminated.

### *Goal Congruence*

Often, the company as a whole benefits from the buying and selling divisions negotiating a price that is agreeable to both parties. Fairness is an issue that must be weighed. The firm as a whole will win if the divisions elect to enter negotiations freely.

### *Performance Evaluation and Autonomy*

A negotiated price may be a suitable surrogate for a market price. A market atmosphere is created if buyers and sellers are free to go outside and if neither division has an unfair power position—such as a monopoly position for purchases or sales.

Negotiations can be between buyer and seller alone or involve the corporate office. If negotiations lead to arbitration by the corporate office or if corporate policies interfere with free negotiations, autonomy suffers. The corporate office has the delicate problem of keeping hands off and yet monitoring divisional dealings to prevent significant noncongruent behavior.

### *Administrative Cost*

Negotiations are often expensive, consume time of key executives, and may cause an internal unit to be created to handle these relationships. If intracompany sales are important to a division, its managers must put a high priority on these negotiations. Its sales and profit levels are at stake. In highly integrated companies, negotiation costs can be a major operating expense.

### *Dual Transfer Prices*

A **dual transfer pricing system** allows the selling division to "sell" at a real or synthetic market price (such as full cost plus a profit percentage). The transfer price to the buying division is usually the variable cost (plus perhaps identifiable opportunity costs). Use of dual transfer prices has been suggested as a way of creating a profit, and thus a positive motivation, in both the selling and buying divisions. Such a system, however, does expand the corporate office accounting task. Intracompany sales and duplicate profits have to be eliminated before total company profits can be determined.

### *Goal Congruence and Performance Evaluation*

The advantages of a dual transfer price system rest on being able to evaluate performance of both units as profit centers and to encourage behavior that will benefit the firm as a whole. Thus, the dual system provides the buying division with incremental cost information and at the same time allows the selling division to show a profit. Such a system encourages the congruence of divisional goals with company-wide goals.

If the selling division has substantial fixed costs to cover, a danger does exist that the buying division will sell at cut-rate prices and fail to cover all fixed costs. Here active corporate-level monitoring may be needed.

### *Autonomy and Administrative Cost*

Costs and corporate interference are the practical considerations and the major obstacles to the use of dual transfer pricing systems. From an accounting point of view, each division records its own transactions, and the central office must monitor, record, and track intracompany dealings, a clear violation of autonomy. In financial statements for the combined company, accounts representing intracompany transactions are eliminated. For example, a selling division will record a sale and establish a receivable; a buying division will record a purchase and set up a payable. In eliminating the intracompany accounts, any intracompany profits in the buying division's inventory will be adjusted out. The home office must have a special accounting system to track all transactions of a dual pricing system. These extra costs must be outweighed by the benefits of better performance evaluation and goal congruence.

Commonly, the dual transfer pricing system is an academic approach to solving transfer pricing conflicts. But occasionally, a real world firm will put a dual pricing system in place. Given the right circumstances and intent of management, a dual system can generate the desired combination of benefits.

### Evaluating Transfer Pricing Methods According to the Criteria

Having discussed the transfer pricing criteria and the methods commonly used, an assessment of the relative strengths and weaknesses is as follows:

| | Goal congruence | Performance evaluation | Autonomy | Administrative cost |
|---|---|---|---|---|
| Market prices | Strong | Very Strong | Very Strong | Low, if available |
| Cost-based prices: | | | | |
| Actual cost | Poor | Poor | Poor | Very Low |
| Full cost plus profit | Poor | Average | Average | Low |
| Variable cost | Strong | Very Poor | Poor | Often Low |
| Negotiated prices | Strong | Strong | Strong to Poor | High |
| Dual prices | Strong (Variable Cost) | Strong (Market Price) | Poor | High |

Remember that specific cases can produce very different answers in each area. Clearly, no one transfer price serves all purposes. Managers must rank their priorities and select transfer pricing policies that fit the situation. Perhaps the goal really is to select a transfer pricing policy that creates the least disruption or adverse managerial behavior.

## 11.6 Maximizing International Profits: The Role of Transfer Prices

"Buy low, and sell high" is the proverbial route to profits. However, other factors determine how much profit is kept and how much is taxed or restricted in global business. Income taxes, import duties, and limits on repatriation of profits are major components in creating complex international financial management problems. In a truly global world, goods and cash should flow across borders without restriction and without tariffs being imposed. Also, tax rates would be the same in all countries with little inflation and minimal changes in currency exchange rates. Absent these ideals, the company's controller must develop strategies to minimize financial risks and to maximize profits and cash flow. Historically, transfer pricing has been used to manipulate profit levels internationally.

Because a transfer between subunits of a firm does not occur at arm's length, manipulation of the transfer price can occur. Cost-based transfer prices can include, at management's discretion, more or fewer costs. Transfer prices for a multinational company are more complex because conditions differ in each country in which the company does business. Governments are concerned because transfer prices affect tax revenues. Companies are concerned because transfer prices affect direct cash flows for payments of goods, taxes, prices, and management performance evaluations.

Naturally, we want managers to make decisions that enhance company goal congruence. However, international transfer pricing goes beyond domestic needs to include:

- Minimization of world-wide income taxes and import duties.
- Avoidance of financial restrictions, including the movement of cash.
- Approvals from the host country.

Assume that Firm A in Country A and Firm B in Country B are subsidiaries of the same holding company, International Pearls. The following cases could exist:

1. If income tax rates are high in Country A and low in Country B, use a low transfer price for sales from Firm A to Firm B. More profits will be shifted to Firm B, lowering total tax payments.
2. If import duties are high for imports into Country B, use a low transfer price for sales from Firm A to Firm B. Low duties are paid; profits are higher.
3. If Country B restricts cash withdrawals from the country or imposes a tax on dividends paid to the holding company, use a high transfer price on sales from Firm A to Firm B. This allows a greater cash outflow from Country B through payments for purchases.

When these simple cases are fused and more issues are added, situations quickly become complex, particularly when revenue-hungry governments are involved.

## Minimization of World-Wide Taxes

Manipulation opportunities in the transfer price setting process mean taxable profits can be shifted from a country with high income tax rates to a country with lower taxes. For example, assume that the tax rate in Brazil is 50 percent, while the tax rate in the U.S. is 35 percent. A U.S. subsidiary of a multinational company sells a product to its sister subsidiary in Brazil. If we assume that a normal transfer price is $16 per unit but that the transfer price for units going into Brazil is set at $20 per unit, the U.S. subsidiary's profit will be higher by $4 per unit ($20 − $16) which is taxed at 35 percent. When the Brazilian subsidiary sells the units, its cost of goods is higher and profits are lower by $4 per unit. Therefore, $4 per unit is taxed at 35 percent, not 50 percent.

**International taxation** occurs when a domestic government imposes taxes on income or wealth generated within its boundaries by a company based in a foreign country. Also, taxes are levied on income earned by a domestic company from activities in foreign countries. A company is taxed in the foreign country and in the multinational's home-base country. For example, Pharmacia & Upjohn is a U.S.-based pharmaceutical firm with extensive global operations. It must comply with U.S. tax laws and tax laws of each country in which it does business.

International taxation has dramatic impacts on management decisions, such as where a company should invest, what form of business organization is used, what products are produced where, how prices and transfer prices are set, which currency should be used to denominate transactions, and what financing should be used. A firm must have

professional expertise on its staff or available to review its tax status and the impacts that changes in tax treaties, agreements, laws, and regulations will have.

Governments and taxpayers are equally aware of tax minimization strategies. Tax laws in each country reduce the management accountant's flexibility. Even if we assume that they have a desire to be inherently fair, governments want to generate revenue, plug tax and cash-flow loopholes, get at least their share of tax revenues, promote specific types of economic growth, and perhaps build in subtle biases in favor of domestic firms.

The European Community (EC), General Agreement on Tariffs and Trade (GATT), North American Free Trade Agreement (NAFTA), and other bilateral and multilateral agreements have as their main themes encouraging free trade. While "free" means loosening many barriers, reducing or eliminating import duties and other cross-border taxes and fees is of major importance.

### Avoidance of Financial Restrictions

Foreign governments often place financial restrictions on international subsidiaries operating within their boundaries. Government restrictions are placed on the amount of cash that may leave the country and for management fees charged by the parent company. Thus, moving profits and, therefore, "stuck" cash by high transfer prices can reduce those restricted profits and increase firm-wide liquidity and financial mobility.

### Gaining Host Country Approval

Governments are not naive. They are becoming sophisticated and aware of the results of using high or low transfer prices. Governments compare prices to arms-length sales prices elsewhere. Products are analyzed for content. Price controls may be based on the transferred-in cost. For example, price increases may be limited by government regulators to cost increases. In the long run, companies find that transfer pricing policies which satisfy foreign authorities may be in the best interest of the company when compared to the greater profits that might be sacrificed. A foreign government's requirements about domestic ownership, percentage of locally produced content, and approval for government sales can be significant factors in determining how an international market is entered and how a company will operate there.

## Chapter Summary

Many companies have sought to increase their financial performance by organizing themselves into an array of profit or investment centers. Decentralizing a company involves defining boundaries for organizational units, called responsibility centers, and delegating decision-making authority to the managers of these centers. Such a structure motivates managers to work for the benefit of the company, provides for front-line decision making by those nearest the action, enhances specialization by letting managers do what they do best, and reduces the span of control for management.

A control system is necessary if management wants to motivate its division managers and to evaluate performance. Measurements of expected performance level and of actual

performance are the two essential ingredients for a control system. Since decentralized companies frequently place investment authority at the divisional level, performance measures should relate profitability to the amount of investment. Return on investment, residual income, and economic value added are approaches to divisional financial performance evaluation. Problems exist in defining both profit and investment. Possible profit definitions include segment margins and controllable margins. Possible investment definitions include net direct assets and managed assets.

Divisions within a company do not operate in isolation from one another; rather, they frequently do business as buyer and seller. Any time intracompany transactions occur, a transfer price must be attached to the transaction. Criteria of goal congruence, performance evaluation, autonomy, and administrative cost are developed to measure the strengths and weaknesses of each type of transfer price. Transfer prices can be market based, cost based, negotiated, or dual. No one method meets all criteria. Each has strengths and weaknesses depending on the importance of intracompany dealings and the priorities of management. Transfer pricing of goods and services moving among units of the same company and across borders takes on a meaning different from that of domestic transfer pricing.

## Problem for Review

A division of Field's Office Rentals follows a pricing policy whereby normal activity is used as a basis for pricing. That is, prices are set on the basis of long-run annual volume predictions and market conditions. They are then rarely changed, except for notable changes in wage rates or supplies prices. The division controller, David Mazel, has provided the following data:

| | |
|---|---|
| Supplies, wages, and other variable costs | $5,000 per unit per year |
| Fixed overhead | $30,000,000 per year |
| Desired rate of return on invested capital | 20% |
| Normal annual rental volume | 40,000 units |
| Invested capital | $90,000,000 |

**Required:**

1. What net income percentage based on revenues is needed to attain the desired rate of return?
2. What rate of return on invested capital will be earned at a rental volume of 35,000 units?
3. If rentals were to drop to 35,000 units, by what percentage must each of the following variables change from the normal level of 40,000 units to achieve the 20 percent rate of return?

   **(a)** Rental price.
   **(b)** Fixed overhead.
   **(c)** Return on revenues percentage.
   **(d)** Invested capital.

**Solution:**

1. Net income = Investment base x Return on investment
= $90,000,000 x 20%
= $18,000,000

To solve for the net income percentage, first find revenues necessary to earn the $18,000,000 net income:

| | |
|---|---|
| Net income | $18,000,000 |
| Plus: | |
| Variable cost (40,000 x $5,000) | 200,000,000 |
| Fixed cost | 30,000,000 |
| Revenues | $248,000,000 |

**Note:** The rental price is $6,200 per unit ($248,000,000 ÷ 40,000 units). This value is needed later in the solution.

Net income percentage = Net income ÷ Revenues
= $18,000,000 ÷ $248,000,000
= 7.26%

2. Sales volume drops to 35,000 units:

| | |
|---|---|
| Revenues (35,000 × $6,200) | $217,000,000 |
| Less: Variable cost (35,000 × $5,000) | − 175,000,000 |
| Contribution margin | 42,000,000 |
| Less: Fixed cost | − 30,000,000 |
| Net income | $12,000,000 |

Return on investment = Net income ÷ Investment base
= $12,000,000 ÷ $90,000,000
= 13.33%

3. First, format the income statement for the normal volume of 40,000 units, with dollars and percentages:

| | | |
|---|---|---|
| Revenues (40,000 × $6,200) | $248,000,000 | 100.00% |
| Less: Variable cost (40,000 × $5,000) | − 200,000,000 | 80.65% |
| Contribution margin | $48,000,000 | 19.35% |
| Less: Fixed cost | − 30,000,000 | 12.10% |
| Net income | $18,000,000 | 7.25% |

Remember that this net income provides a 20 percent rate of return.

Assume drop in volume to 35,000 units:

**(a)** Change in rental price:

| | |
|---|---|
| Net income | $18,000,000 |
| Plus: | |
| Variable cost (35,000 × $5,000) | 175,000,000 |
| Fixed cost | 30,000,000 |
| Revenues | $223,000,000 |
| Divided by volume in units | ÷ 35,000 |
| New rental price per unit | $6,372 |

This represents an increase of 2.77 percent over the original rental price of $6,200 per unit.

**(b)** Change in fixed overhead:

| | |
|---|---|
| Revenues (35,000 × $6,200) | $217,000,000 |
| Less: Variable cost (35,000 × $5,000) | − 175,000,000 |
| Contribution margin | $42,000,000 |
| Less net income | − 18,000,000 |
| New fixed overhead | $24,000,000 |

This represents a decrease in fixed overhead of 20 percent over the original fixed overhead of $30,000,000.

**(c)** Change in return on revenues percentage:

Dividing the revenues figure of $223,000,000, from Part (a), into the net income figure of $18,000,000 gives a return on revenues percentage of 8.07. This represents an increase of 11.16 percent over the original return on revenues percentage of 7.26 ($18,000,000 ÷ $248,000,000).

**(d)** Change in invested capital:

$$\begin{aligned}\text{New investment base} &= \text{Net income (from Part 2)} \div \text{ROI} \\ &= \$12{,}000{,}000 \div .20 \\ &= \$60{,}000{,}000\end{aligned}$$

This represents a decrease in investment base of 33.33 percent over the original investment base of $90,000,000.

## Key Terms

**asset turnover** The ratio of sales divided by an investment base, which measures the efficiency of generating sales with the assets employed.

**cost-based transfer prices** Prices that are based on production costs and used to transfer goods or services from one subunit to another subunit of an organization.

**decentralization** The delegation of decision-making authority to lower managerial levels in an organization.

**decentralized company** A company in which operating subunits are created with definite organizational boundaries and in which managers have decision-making authority.

**division controllable margin** The excess of revenues over variable costs and other costs controlled by the division manager.

**division net profit** The excess of revenues over variable costs, direct fixed costs, and any costs allocated to the division.

**division contribution margin** The excess of revenues over variable costs.

**dual transfer pricing system** Pricing systems that use a full-cost plus price or a market price for the selling subunit and use variable cost plus opportunity costs for the buying subunit.

**economic value added (EVA)** A measure of divisional performance that deducts a capital charge from an adjusted accounting profit.

**full-cost transfer price** A price based on full manufactured cost of the product or service and used by the seller and buyer as the transaction value.

**goal congruence** A condition under which managers work to achieve their own objectives, and at the same time, accomplish the objectives of the organization.

**international taxation** Occurs when a domestic government imposes taxes on income or wealth generated within its boundaries by a company based in a foreign country.

**investment base** The amount of investment uniquely devoted to support a particular divisional operation.

**market price** A price agreed upon by independent buyers and sellers.

**minimum desired rate of return** The imputed capital charge used in computing residual income, as selected by top management, for determining the division's minimum acceptable return.

**negotiated transfer prices** Prices agreed to by both the buying and selling subunits of a organization to transfer goods or services between the two subunits.

**residual income** The operating profit of a division less an imputed charge for the operating capital used by the division.

**return on investment (ROI)** The ratio of profit divided by investment.

**return on sales (ROS)** The ratio of profit divided by sales.

**segment margin** The excess of revenues over variable costs and all fixed costs traceable to the division.

**transfer price** The value a company attaches to goods or services furnished by one division to another division within the company.

**variable-cost transfer prices** Prices based on variable costs of the products or services transferred from the seller to the buyer and used by the seller and buyer as the transaction value.

## Questions for Review and Discussion

1. What are the advantages of decentralization? What are the primary problems of decentralization?
2. How is performance generally measured in a cost center? In a profit center? In an investment center?
3. What are some problems in using division profit as an evaluation measure?
4. Identify and explain allocation problems involved in determining a profit measure and the investment base for calculating ROI.
5. List the components of the ROI equation, tell how they are related, and identify an action a manager can take regarding each component to improve ROI.
6. Identify the major factors necessary in conceptually defining profit centers for promoting decentralization in an organization.
7. Identify four criteria that are useful in evaluating transfer prices for intracompany transactions.
8. Explain and comment on the following paragraph from a recent publication:

> A pseudo-profit center is one that is artificially carved out of an organization by management, such as making the maintenance department in a factory a profit center. The primary advantage of a pseudo-profit center is that it captures the motivational advantages of real profit centers. But an analysis of pseudo-profit centers shows that the transfer pricing techniques used to create them can cause motivational disadvantages that completely overshadow any perceived advantages. Frequently, pseudo-profit centers will motivate managers to act in a dysfunctional manner.

9. Briefly describe a dual transfer price. What are the advantages and disadvantages of implementing such a pricing system?
10. What is the disadvantage of negotiated transfer prices when no intermediate market exists for the producing division?
11. Why is an international transfer price often not the result of an arm's-length transaction?
12. Give an example of how transfer prices could be used to minimize world-wide taxation.

## Exercises

**11-1. Profit Measures.** The following data are from the Personal Injury Division of a law firm, Ezor & Associates:

| | |
|---|---|
| Revenues | $95,000 |
| Division variable cost | 48,000 |
| Allocated home office overhead | 7,000 |
| Fixed overhead traceable to division ($5,000 is controllable, and $15,000 is not controllable) | 20,000 |

**Question:**

Calculate division contribution margin, division controllable margin, segment margin, and division net profit.

**11-2. Valuing Assets**. Stanley Hoffman, the president of Rivchew Carpet Cleaners, has returned from an executive management seminar in Los Angeles. He sees you in the office coffee lounge and says, "As I read and hear more and more on valuing assets, I am increasingly bewildered by the 'language of accounting.' Yes, I understand historical cost and its problems. But you accountants also mix and match terms like market value, replacement value, economic value, present value, opportunity value, disposal value, entry value, and more values! You seem to have extra time since I see you here in the lounge a lot. Maybe you could help clear up this confusion for me by writing a memo that lays out how these terms can help us to make decisions about divisional performance and about keeping or selling these assets and to inform our shareholders about our performance."

**Question:**

Respond to the president's request.

**11-3. ROI and Residual Income.** Puffino Life & Casualty is a large insurance company headquartered in Milan, Italy and has 14 divisions. The company has a 15 percent minimum desired rate of return. Its Residential Insurance Division has an investment base of 700,000 euros. During the current year, this division earned a residual income of 90,000 euros and had a return on sales of 8 percent.

**Questions:**

1. Compute the division's ROI for the current year.
2. Compute the division's asset turnover for the current year.

**11-4. ROI and Divisional Charges**. The following three charges are found on the monthly report of a division of Ed Leader Enterprises. This division provides financial services primarily to outside companies. Division performance is evaluated using ROI.

**(a)** A charge for general corporation administration at 10 percent of division revenues.

**(b)** A charge for the use of the corporate computer facility. The charge is determined by taking actual annual computer department costs and allocat-

ing an amount to each user based on the ratio of divisional hours used to total corporate hours used.

**(c)** A charge for services provided by another division. The charge is based on a competitive market price for similar services.

**Question:**

Are any of these charges consistent with responsibility accounting and managerial performance evaluation? Explain.

**11-5. Economic Value Added**. Bill Robbins & Associates is an engineering firm with four divisions, each of which has a cost of capital of 15 percent. One of its divisions, Civil Engineering, had an EVA of $5 million in 2010. This division had total capital of $20 million, which included an addition of $2 million in research and development costs.

**Question:**

Determine the adjusted accounting profit for the Civil Engineering Division.

**11-6. Decision Based on a Transfer Price**. The following information is available for Division A of Copeland Corporation:

| | |
|---|---|
| Selling price to outside customers | $31 |
| Variable cost per unit | $20 |
| Fixed cost per unit (based on capacity) | $4.25 |
| Capacity in units | 17,000 |

Division B would like to purchase 5,000 units each year from Division A. Division A has enough excess capacity to handle all of Division B's needs. Division B now purchases from an outside supplier at a price of $28 and insists that it should be charged that same price by Division A.

**Question:**

If Division A refuses to accept the $28 price for transfers to Division B, what effect would this have on the annual profit of Copeland Corporation?

**11-7. Transfer Prices and Decision Making**. Division 1 of Joel Marks & Company produces 100,000 units of a product with a variable cost of $5 per unit and a fixed cost of $3 (based on $300,000 allocated to 100,000 units). These units can be sold in an intermediate market for $1,000,000 ($10 per unit) or transferred to Division 2 for additional processing and sold in a finished market. The selling price of the fully processed units is $14, and the additional processing cost in Division 2 is $1.50 per unit. The fixed costs in Division 2 total $100,000. At this time, excess capacity exists in Division 2 if the units are not transferred.

**Question:**

Should the 100,000 units be sold by Division 1 or processed further and sold by Division 2? Would a transfer price based on either market price or variable cost be likely to lead to the right decision? Explain.

**11-8. Transfer Pricing Problem**. Grey Company has a production division which is currently manufacturing 120,000 units but has a capacity of 180,000 units. The variable cost of the product is $22 per unit, and the total fixed cost is $720,000 or $6 per unit based on current production.

The Sales Division of the Grey Company offers to buy 40,000 units from the Production Division at $21 per unit. The Production Division manager, Debby Green, refuses the order because the price is below variable cost. The Sales Division manager, Verna Black, argues that the order should be accepted since by taking the order the Production Division manager can lower the fixed cost per unit from $6 to $4.50. (Output will increase to 160,000 units.) This decrease of $1.50 in fixed cost per unit will more than offset the $1 difference between the variable cost and the transfer price.

**Questions:**

1. If you were the Production Division manager, would you accept the Sales Division manager's argument? Why or why not? (Assume that the 120,000 units currently being produced sell for $30 per unit in the external market.)
2. From the viewpoint of Grey Company, should the order be accepted if the manager of the Sales Division intends to sell each unit to the outside market for $27 after incurring an additional processing cost of $2.25 per unit? Explain.

**11-9. Decentralization and Transfer Pricing Policy Implications**. Assume you are concerned about managing corporate profitability as well as divisional decentralization and autonomy. Comment on each of these:

**(a)** From the viewpoint of the corporation, does any general transfer-pricing rule lead to the maximization of corporate profits?
**(b)** Why might a division manager reject a cost reduction proposal with a positive net present value, preferring instead to retain an inefficient old asset?
**(c)** Many firms use cost-plus or negotiated transfer prices even though they do not lead to optimal results for individual products. Why?
**(d)** Competitive market prices are often thought to be ideal transfer prices. Is this true? Explain your answer.
**(e)** Why might it be said that the goal of a divisional manager performance evaluation system should be to "create the least amount of dysfunctional behavior" by the individual manager?

**11-10. Transfer Prices and Income Statements**. Nordenberg Company has two divisions, M and S. Division M manufactures a product, and Division S sells it. The intermediate market is competitive. But the product can be processed further and sold or stored for later processing and sale. Once the product is manufactured,

some of it is sold by Division M, and some is transferred to Division S, which decides whether to hold or to process and sell the product. The following information pertains to the current year:

| | |
|---|---|
| Division M manufacturing cost for 1,200,000 units | $7,200,000 |
| Of the 1,200,000 units produced: | |
| Sold by M in intermediate market – 600,000 units | 6,000,000 |
| Held by S for later sale – 200,000 units (no additional processing work done on these units in Division S) | 2,000,000 |
| Processed by S and sold – 400,000 units | 7,200,000 |
| Intermediate market value of 600,000 units when transferred to S | 6,000,000 |
| Total additional processing costs of S | 1,300,000 |

Assume no beginning inventories.

**Questions:**

1. Prepare an income statement for the whole firm.
2. Prepare a separate income statement for each division using a cost-based transfer price.
3. Prepare a separate income statement for each division using a market-value transfer price.

**11-11. Transfer Pricing Problem**. The tailor shop in Sons of the Desert, a men's clothing store, is set up as an autonomous unit. The transfer price for tailoring services is based on variable cost which is estimated at $12 per hour. The store manager, Howard Newman, feels that the Suit and Sport Coat Department is currently using too much tailor time and that this department could cut down on hours used by taking more care in fitting the garments. Newman has decided to double the hourly tailor rate even though this new rate will be no reflection of the real variable cost. The idea is simply to provide an incentive to the Suit and Sport Coat Department to conserve on tailor time.

**Questions:**

1. What possible disadvantages do you see in the store manager's action? Do you agree or disagree with this means of stressing the need to conserve tailor time? Why?
2. Would it make any difference if the various selling departments were not required to use the tailor shop and were allowed to take their work to some outside tailor shop? Explain.

**11-12. Transfer Pricing**. Koch Enterprises is an import company which purchases men's shirts in the Far East and sells them in the U.S. The company's Acquisition Division sells to over 200 retail and wholesale establishments. In addition, Koch supplies its own Wholesale Division, which also purchases merchandise from other vendors. The following July data pertains to Koch's Acquisition Division:

| | |
|---|---|
| Selling price to outside retailers and wholesalers | $12 |
| Variable cost per shirt | $5 |
| Total fixed costs | $7,000 |
| Capacity (number of shirts) | 16,000 |

Currently, the Acquisition Division is selling all it can purchase to outside retailers and wholesalers. If it sells to the Wholesale Division, $0.75 can be avoided in variable cost per shirt. The Wholesale Division is currently purchasing from an outside supplier at $11.50 per shirt.

**Questions:**

1. From the point of view of the Acquisition Division, any sales to the Wholesale Division should have a price of at least how much?
2. Use the same facts as in Part (1) except that the Acquisition Division can sell only 10,000 shirts to outside retailers and wholesalers. How would your answer to Part (1) change?

**11-13. Goal Congruent Transfer Pricing**. The Wartell Division of Wolchan Ski Products makes and sells a single product. The annual production capacity is 35,000 units and the variable cost to make each unit is $30. Currently, the Wartell Division sells 32,000 units per year to outside customers for $42 per unit. All selling costs are fixed. The Zangwill Division would like to purchase 15,000 units a year from Wartell.

**Question:**

According to the goal congruent transfer pricing formula, what unit price should the Wartell Division charge the Zangwill Division?

## Problems

**11-14. Capital Budgeting and ROI**. Ashburn, Inc. has a division which performs telemarketing services for clients throughout the U.S. The income statement of this division is as follows:

| | | |
|---|---|---|
| Revenues | | $17,000,000 |
| Less: Division costs: | | |
| Variable cost | $12,000,000 | |
| Fixed cost | 4,000,000 | 16,000,000 |
| Segment margin | | $1,000,000 |
| Less: Allocated central office overhead | | 500,000 |
| Net income | | $500,000 |
| Investment allocated to division | | $5,000,000 |
| ROI | | 10 percent |

The management is disturbed about the low ROI. The corporate treasurer, Doreen Burton, indicates that the company can earn at least 20 percent on investment funds from any number of other projects. Furthermore, Burton points out that the investment is actually understated because the facility carried at a cost of $5,000,000 could be disposed of for about $8,000,000.

An investigation reveals that 50 percent of the division's fixed cost of $4,000,000 cannot be eliminated even if the division is sold. The allocated central office overhead is a pro-rata share of operating the corporate offices, and sale of the division would not affect this cost either.

**Questions:**

1. Assuming that an expenditure of $1,000,000 annually would maintain the facility in good operating condition for at least 10 years, should the division be sold? Explain.
2. If not, does a better way of reporting the ROI exist that would alert management to consider selling if volume begins to decline? Describe.

**11-15. Transfer Pricing and Purchasing Decisions**. Fernhoff Corporation, manufacturer of specialized trailers for over-the-road and container shipping, is decentralized, with each product line operating as a divisional profit center. Each division head is delegated full authority on all decisions involving sales of divisional output both to outsiders and to other divisions of Fernhoff. The International Shipping Division (ISD) has always purchased its requirements for a particular trailer platform subassembly from the Highway Division (HD). However, when informed that the HD was increasing its price to $300, ISD management decided to purchase the subassembly from an outside supplier.

ISD can purchase a similar subassembly from a reliable supplier for $260 per unit plus an annual die maintenance charge of $20,000. HD insists that owing to the recent installation of some highly specialized equipment, which has resulted in high depreciation charges, it would not be able to make an adequate profit on its investment unless it charged $300. In fact, the ISD business was part of the justification for buying the new equipment. HD's management appealed to Vivian Sweetwood, the company's CEO, for support in its dispute with ISD and supplied the following operating data:

| | |
|---|---|
| ISD's annual purchases of subassembly | 2,000 units |
| HD's variable costs per unit of subassembly | $220 |
| HD's fixed costs per unit of subassembly | $65 |

**Questions:**

1. Assume that no alternative use for HD's internal facilities exists. Determine whether the company as a whole will benefit if ISD purchases the subassembly from the outside supplier.
2. Assume that HD's internal facilities would not otherwise be idle. By using the capacity needed to produce the 2,000 units for ISD for other production, HD can

earn $40,000 in contribution margin. Should ISD purchase from the outsider? Explain.

3. If the outside supplier drops the price by another $20 per unit, would your answer to either Part 1 or 2 change? If so, why?

**11-16. Transfer Pricing and Bids**. The Jay Division of Cinnamon Corporation expects the following results for the coming year on sales to outsiders:

| | | |
|---|---|---|
| Sales (100,000 units) | | $600,000 |
| Variable cost of sales | $300,000 | |
| Fixed cost of sales | 200,000 | 500,000 |
| Profit | | $100,000 |

Yesterday, Dennis Goldstein, the manager of the Ray Division, requested a bid from Jay for 30,000 units. Ray would perform additional work on each unit at a cost of $4 per unit and sell the end product for $9 per unit. Jay can make only 120,000 units per year and would have to forego some regular sales if the Ray business is accepted. Ray has an outside bid of $4.50 per unit.

**Questions:**

1. What is the minimum bid Jay should make to Ray, and what transfer pricing goal is being optimized?
2. What is the maximum bid Jay should make to Ray, and what transfer pricing goal is being optimized?
3. If Ray buys from the outside supplier, does Cinnamon gain or lose and by how much?

**11-17. Transfer Pricing and Divisional Income Statements**. Blech Packing Company has two divisions. Division 1 is responsible for slaughtering and cutting the unprocessed meat. Division 2 processes meat such as hams, bacon, etc. Division 2 can buy meat from Division 1 or from outside suppliers. Division 1 can sell at the market price all the unprocessed meat that it can produce. The current year's income statement for the company is as follows:

| | | | |
|---|---|---|---|
| Sales | | | $2,600,000 |
| Cost of goods sold: | | | |
| Beginning inventory | | $0 | |
| Plus: Processing costs: | | | |
| Livestock costs, Division 1 | | $600,000 | |
| Labor, Division 1 | | 400,000 | |
| Overhead, Division 1 | | 500,000 | |
| Processing supplies, Division 2 | | 200,000 | |
| Labor, Division 2 | | 300,000 | |
| Overhead, Division 2 | | 100,000 | |
| Cost of goods available for sale | | $2,100,000 | |
| Less ending inventory cost: | | | |
| Division 1 | $0 | | |
| Division 2 | 200,000 | 200,000 | 1,900,000 |
| Gross margin | | | $700,000 |
| Operating expenses: | | | |
| Sales & administrative, Division 1 | | $ 120,000 | |
| Sales & administrative, Division 2 | | 100,000 | |
| Central office overhead | | 100,000 | $ 320,000 |
| Income before income tax | | | $380,000 |

The ending inventory of $200,000 is valued at the product cost incurred in Division 1. This inventory is as yet unprocessed. The market value unprocessed is $300,000. The sales for the year can be broken down as follows:

| | |
|---|---|
| Division 1 (to outsiders) | $600,000 |
| Division 2 | 2,000,000 |
| | $2,600,000 |

The market value of the unprocessed meat actually transferred from Division 1 to Division 2 (exclusive of the ending inventory) was $1,800,000.

**Questions:**

1. Prepare divisional income statements that might be used to evaluate the performance of the two division managers.
2. Explain the transfer pricing policy you have used in preparing the statements.
3. Can you see any conflict in the policy you have used if this same transfer price is to be used for decision making? Explain.

**11-18. Transfer Pricing and Fixed Cost Allocation**. Hardy & Laurel, Inc. has a producing division (Division 1) which supplies several parts to another producing division (Division 2) which produces the main product. These component parts

are listed as follows with relevant cost information, including outside supplier prices:

| Component No. | Variable Cost Per Unit | Quantity Produced | Outside Price |
|---|---|---|---|
| 1 | $11 | 25,000 | $14.50 |
| 2 | 15 | 35,000 | 19.20 |
| 3 | 7 | 15,000 | 9.40 |
| 4 | 5 | 15,000 | 9.60 |

The out-of-pocket fixed costs of Division 1 amount to $270,000. These costs consist of salaries and other overhead. In addition, fixed costs which are not out-of-pocket (consisting mainly of depreciation on machinery) amount to $90,000 per period. In calculating unit cost, total fixed costs of $360,000 are allocated based on units produced to arrive at a full cost.

A full-cost transfer price is used. In Division 2, which uses the four components, the manager, Lou Abbot, has authority to buy inside the company or from an outside supplier. The outside prices vary somewhat throughout the year.

After calculating the full cost, Abbot notices that outside purchase prices of Components 1 and 3 are lower than the transfer prices and places orders with an outside supplier, Hooze Onfirst Enterprises. The Division 1 manager, Bud Costello, stops producing these two components, reallocates fixed costs to the remaining units, and adjusts the full-cost transfer prices.

**Questions:**

1. Reallocate fixed costs and determine the adjusted transfer prices based on full costs of the remaining products. If no communication between the two divisions occurs, what action will the manager of Division 2 likely take?
2. Comment on the deficiencies of the full-cost transfer price system.
3. What if the items transferred to Division 2 from Division 1 are 100 percent of Division 1's business? Devise a method of assigning the fixed cost of Division 1 to Division 2 that will not cause Division 2 to buy outside when the components could be produced by Division 1.
4. What if the items transferred to Division 2 from Division 1 are 4 percent of Division 1's total business? How would your answer to Part 3 change?

**11-19. Transfer Price Decision**. The Metropolis Subsidiary of Kryptonite Instruments, Inc. manufactures a small printed circuit board, SuperBoard, and has the capacity to make 100,000 units each year. At the present time, only 75,000 units are being made each year and are sold to an outside customer, Perry White Industries, for $7.50 a unit.

Fixed manufacturing costs are applied on the basis of an annual production of 100,000 units each year. Total fixed costs for the year are $175,000. The total unit cost of each circuit

board is $6.50. The Reeves Subsidiary has been purchasing this type of circuit board from an outside supplier, Lois Lane Enterprises, at a price of $7.50 per unit. The president of Kryptonite, Clark Kent, requests that the Metropolis Subsidiary deliver 25,000 circuit boards to the Reeves Subsidiary at a price equal to the variable cost.

The superintendent of Metropolis, Jimmy Olsen, states that the division gains no advantage by selling at variable cost. No contribution is made to the recovery of the fixed costs. Furthermore, Olsen states that the company gains nothing. The fixed costs of Metropolis must be recovered, and Reeves should pay the full price of $7.50 as it would by buying outside.

**Questions:**

1. Is the argument of the superintendent valid? Explain.
2. What is the variable cost of manufacturing each circuit board?
3. Describe a pricing system that should benefit the company and be acceptable to each division.

**11-20. Transfer Price Based on Full Cost**. The Ohio Division of Dessler Company produces a large metal frame which is sold to the Pennsylvania Division. Pennsylvania Division uses these frames in constructing metal lathes which are sold to machine tool manufacturers. In Ohio Division, the frames are produced in a stamping process and are then run through a finishing process in which they are trimmed and polished before being shipped to the Pennsylvania Division.

The current estimate of the variable cost of materials and labor to produce a frame in the stamping process is $120 per frame. Fixed overhead associated with this process in the Ohio Division is $700,000 per year. Current production is 50,000 frames, which is full capacity for both the stamping and the trimming and polishing processes.

The variable cost of labor in the trimming and polishing process is $12 per frame since labor in this process is paid on a piece-rate basis. (No additional materials are required.) The fixed overhead in this process is $300,000 per year and is largely due to equipment depreciation and related costs. The machines have almost no salvage value because of their special-purpose design.

The transfer price to the Pennsylvania Division is a full-cost transfer price and is calculated by prorating the current fixed cost in each process over the 50,000 frames being produced. The price is quoted for each process and is presented to the manager as follows:

| | | |
|---|---|---|
| Stamping process: | | |
| Materials and labor cost per unit | $120 | |
| Fixed overhead cost per unit ($700,000 ÷ 50,000 units) | 14 | $134 |
| Trimming and polishing process: | | |
| Labor cost per unit | $ 12 | |
| Fixed overhead cost per unit ($300,000 ÷ 50,000 units) | 6 | 18 |
| Total cost per unit | | $152 |

An outside company, Seide Industries, has offered to rent to Pennsylvania Division machinery which would perform the trimming and polishing process. The rental cost of the machinery is $200,000 per year. With the new machinery, the labor cost per frame would remain at $12. The Pennsylvania Division manager, Irving Stone, sees the possibility of obtaining the frames from the Ohio Division for $134 by eliminating the $18 cost of trimming and polishing and of performing these processes in the Pennsylvania Division. An analysis is as follows:

| | |
|---|---|
| New process: | |
| Machine rental cost per year | $200,000 |
| Labor cost ($12 x 50,000 units) | 600,000 |
| Total Pennsylvania Division trimming and polishing costs | $800,000 |
| Current process: | |
| 50,000 units at $18 per unit (portion of the Ohio Division transfer price attributable to trimming and polishing process) | $900 000 |

Irving Stone has approached the vice-president of operations for approval to acquire the new machinery.

**Questions:**

1. As the vice-president, how would you advise Irving Stone?
2. Could the transfer pricing system be improved and, if so, how?

**11-21. Transfer Pricing in a Multinational Company**. Zanitsky Farming Company has two units: the Mexican Division produces grain, and the U.S. Division sells the grain. As soon as the grain is produced, it is placed in storage areas until sold by the U.S. Division. A transfer price is used to charge the U.S. Division and to recognize the Mexican Division as a profit center.

During the year, three grain crops of 1,900,000 bushels each were produced. All three have now been sold, although some were held in inventory for various periods of time. The market prices (in pesos) at production time were M$10 per bushel for the first crop (M$1 = $0.34), M$12 per bushel for the second (M$1 = $0.35), and M$8 per bushel for the third (M$1 = $0.33). No beginning inventories were on hand. The Mexican producer uses a transfer price equal to the market price in pesos.

The results for the period are:

| | |
|---|---|
| Total company revenues (5,700,000 bushels) | $22,300,000 |
| Costs: | |
| Producing division (M$1 = $0.33): | |
| Labor and materials | $13,200,000 |
| Division overhead | 5,610,000 |
| Selling division: | |
| Labor | 900,000 |
| Division overhead | 900,000 |

The company president, Barry Heifitz, is pleased with the total profit (stated in U.S. dollars) generated by the two divisions. He wants to determine whether the price speculation activities of the selling division are earning a profit.

**Questions:**

1. Prepare divisional income statements for each division, using the currency of the country where each operates. Which division is more profitable?
2. Would you use the market price or the cost for the transfer price? Explain.

## Case: Meisels Corporation

Meisels Corporation, headquartered in Cleveland, is a highly diversified company organized into autonomous divisions along product lines. The autonomy permits division managers a significant amount of authority in operating their divisions. Each manager is responsible for sales, cost of operations, acquisition of division assets, management of accounts receivable and inventories, and use of existing facilities. Cash management is centralized at the corporate home office. Divisions are permitted cash for their normal operating needs, but all excess cash is transferred to the corporate home office in Cleveland.

Division managers are responsible for presenting requests for capital expenditures (to acquire assets, expand existing facilities, or make any other long-term investment) to corporate management for approval. Once the proposals are analyzed and evaluated, corporate management decides whether to commit funds to the requests.

Meisels Corporation adopted an ROI measure several years ago. The measure uses division direct profit and an investment base composed of fixed assets employed plus accounts receivable and inventories. ROI is used to evaluate the performance of each division, and it is the primary factor in assessing salary increases each year. Also, changes in the ROI from year to year affect the amount of the annual bonus.

ROI has grown over the years for each division. However, the company's overall ROI has declined in recent years. Cash balances are increasing at the corporate level, and investments in marketable securities are growing. Idle cash and marketable securities do not earn as good a rate of return as division capital investments.

Two of Meisels Corporation divisions—the Apparel Division and the Sports Gear Division—operate retail stores throughout the U.S. The following data (with 000s omitted) show the operating results for these divisions for the last three years: ***(continued)***

## Case: Meisels Corporation *(continued)*

| | Apparel Division | | | Sports Gear Division | | |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2012 | 2013 | 2014 |
| Estimated industry sales | $10,000 | $11,000 | $12,100 | $5,000 | $6,250 | $7,500 |
| Division sales | $1,200 | $1,380 | $1,587 | $500 | $650 | $780 |
| Division direct costs: | | | | | | |
| Variable costs | $360 | $396 | $467 | $ 160 | $182 | $203 |
| Discretionary fixed costs | 480 | 490 | 500 | 180 | 210 | 240 |
| Committed fixed costs | 250 | 300 | 375 | 150 | 215 | 260 |
| Total division direct costs | $ 1,090 | $ 1,186 | $ 1,342 | $ 490 | $ 607 | $ 703 |
| Division net profit | $110 | $194 | $245 | $10 | $43 | $77 |
| Investment base | $1,100 | $1,200 | $1,300 | $125 | $195 | $280 |
| ROI | 10.00% | 16.17% | 18.85% | 8.00% | 22.05% | 27.50% |

The managers of both divisions were promoted to their positions in 2012. Samson Gabor had been assistant division manager of the Apparel Division for six years prior to his appointment as manager of that division. The Sports Gear Division was created in 2010. David Kiva had served as assistant manager of the Toy Division for four years prior to becoming manager of the Sports Gear Division, when the latter position suddenly became available in late 2011.

**Questions:**

1. In general, is ROI an appropriate measure of performance? Explain.
2. Explain how an overemphasis on ROI can result in a declining corporate ROI and in increasing cash and marketable securities.
3. Describe specific actions that might have caused this increase in 2014 divisional ROI while the corporate ROI declined.
4. Assuming the minimum desired rate of return is 12 percent for Apparel and 15 percent for Sports Gear, compute the residual income and the residual income as a percentage of the investment base for each division for each year.
5. Which division manager (Gabor or Kiva) do you judge as the better manager? What are your reasons?